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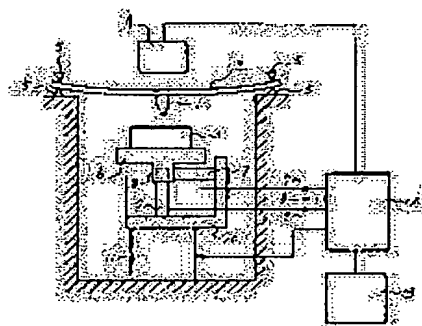
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(54) MEASURING APPARATUS FOR FORCE OF MINUTE PART AND MEASURING APPARATUS FOR SHAPE

(57)Abstract:

PURPOSE: To detect a force of a minute part with high precision by fixing both ends of a beam, by setting a probe in the central part thereof and also by using a non-contact displacement measuring means having a large measuring area.

CONSTITUTION: When a sample 3 is brought as close as about several angstroms to a probe 1 by a rough motion mechanism 11, a force acts between the nearest surface atoms of the probe and the sample, so as to cause the displacement of a beam 2, which is detected by a non-contact displacement measuring means. A Z-axis piezo element 9 is driven by a control unit 12 so that this displacement may be fixed, and thereby a gap between the probe 1 and the sample 3 is kept fixed. When two-dimensional scanning is conducted by X-axis and Y-axis piezo elements 7 and 8 while the above state is maintained, the Z-axis piezo element shows a change on the basis of the shape of the surface of the sample 3, the three-dimensional shape of the surface of the sample is obtained therefrom, and the minute structure thereof can be displayed in a display unit 13. In this way, the beam 2 supported both ends has a freedom in the axial direction of the probe 1, and a motion such as torsion can be prevented.



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